

Remarks/Arguments:

Claims 1-22 are pending in the application. Claims 19-21 are withdrawn. New claims 23-25 are added, reciting electrospinning and the use of poly(lactic acid) as supported throughout the specification and in the Example.

Claims 1-18 are rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. 4,054,625 ("Kozlowski") in combination with U.S. 2004/0241436 ("Hsieh").

The rejection states that Kozlowski teaches all aspects of the process of claim 1, except for the produced fiber having an internal cavity and a diameter of at most 10 micrometers. The rejection relies upon Hsieh to supply these features, asserting that it would have been obvious to modify Kozlowski's methods to provide fibers with these features for the purpose of providing Kozlowski's fibers with a high surface area.

Relying upon this combination, the rejection concludes that all of the claimed elements were known in the prior art. Applicants submit that prior knowledge of each element is not sufficient to establish obviousness under § 103.

"[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." *KSR Int'l Co. v. Teleflex Inc.*, emphasis added.

Applicants submit that the rejection does not establish obviousness because it proposes no reason that would have prompted the person of ordinary skill to increase the surface area of Kozlowski's fibers. The rejection relies upon a purported desire to increase surface area as the reason for looking to Hsieh, but Kozlowski gives no indication that his fibers lack sufficient surface area. Nor does Kozlowski suggest that increasing the surface area would be beneficial for his purposes, i.e., to produce fibers for papermaking. And the rejection does not meet this requirement by proposing any reason, known to the person of ordinary skill in the papermaking art, to desire fibers like Kozlowski's but with a higher surface area. In short, no reason has

been identified to provide the fiber properties taught by Hsieh. For this first reason, *prima facie* obviousness has not been established, and the rejection should be withdrawn.

Further, and separately, the proposed combination would not have been *prima facie* obvious because Kozlowski teaches against the use of continuous fibers, which is what Hsieh produces. Kozlowski's stated objective is to produce discrete fibers, and he states explicitly that continuous fibers are undesirable for the purposes of his invention. To achieve his goals, Kozlowski flashes a polymer/solvent solution, with water dispersed in it, at high temperature through a nozzle because "surprising[ly]" that method provides discrete fibers.

"It is a surprising effect of flashing a water-in-oil emulsion containing a polymer, that the product is obtained as relatively discrete fibers rather than continuous integral strands. Most prior processes tend to form continuous strands, which is undesirable for a fibrous product whose intended use is for making non-woven webs." (Kozlowski column 1 line 67 to column 2 line 4, emphasis added)

In direct contrast, Hsieh's objective is to make continuous fibers. Specifically, he provides polymer-based nanofibers, and defines "nanofibers" as requiring that the fiber be continuous. See [0007] and [0046] To achieve this goal, he electrospins his fibers from a solvent, but he does not teach an emulsion or other two-phase solvent system in which one of the solvents is water as presently claimed. The only way in which Hsieh teaches the person of ordinary skill to make a fiber having the elements not provided by Kozlowski (an internal cavity and a diameter of at most 10 micrometers) is by electrospinning, but that process results in continuous fibers. Kozlowski teaches against continuous fibers. It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) Thus, for this second reason, *prima facie* obviousness has not been established.

For the above reasons, each independently on its own merits, Applicants submit that *prima facie* obviousness has not been established for claims 1-18. Accordingly, Applicants urge reconsideration and withdrawal of the rejection.

Claims 1-11 and 15-18 are rejected under 35 U.S.C. § 103(a) as unpatentable over Kozlowski in combination with U.S. 2006/0194036 ("Miyamoto"). The rejection states that Kozlowski teaches all aspects of the process of claim 1, except for the produced fiber having an internal cavity and a diameter of at most 10 micrometers. The rejection relies upon Miyamoto

to supply these features, asserting that it would have been obvious to modify Kozlowski's methods to provide fibers with these features for the purpose of providing Kozlowski's fibers with desired tear strength and flexibility.

Applicants respectfully traverse, and point out that that neither Kozlowski nor Miyamoto discloses a way to make fibers with an internal cavity and a diameter of at most 10 micrometers as claimed. Miyamoto does describe forming "fiber structures" by aggregating electrospun fibers, and the fiber structures may be in the form of tubes. But the only such tubes described are far larger than presently claimed, having an inside diameter of 2mm. See [0050] While Miyamoto states that the fibers used for making the "fiber structures" of his invention may be hollow or porous, he does not disclose methods of making such fibers nor does he indicate any other source of these. Thus, Miyamoto does not enable the person of ordinary skill to make fibers having an internal cavity and a diameter of at most 10 micrometers, as claimed. But enablement is a necessary condition for obviousness.

"A conclusion of obviousness requires that the reference(s) relied upon be enabling in that it put the public in possession of the claimed invention." (See MPEP 2145)

The disclosure in an assertedly anticipating reference must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is undue experimentation. *Elan Pharm., Inc. v. Mayo Found. For Med. Educ. & Research*, 346 F.3d 1051, 1054, 68 USPQ2d 1373, 1376 (Fed. Cir. 2003) A reference contains an "enabling disclosure" if the public was in possession of the claimed invention before the date of invention. "Such possession is effected if one of ordinary skill in the art could have combined the publication's description of the invention with his [or her] own knowledge to make the claimed invention." *In re Donohue*, 766 F.2d 531, 226 USPQ 619 (Fed. Cir. 1985). (See MPEP 2121.01)

Combination of the cited references does not put the public in possession of the claimed invention and it does not enable the person of ordinary skill to arrive at the claimed invention. Therefore, the rejection of claims 1-11 and 15-18 should be withdrawn.

Claim 22 is rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. 2002/0100725 ("Lee"), and also over Lee in combination with Kozlowski. The rejection asserts that Lee teaches electrospinning an emulsion. This is incorrect. Lee merely states that "... the polymer may be mixed with an emulsion ..." but does not say that the result of such mixture is itself an emulsion. (Lee at [0030]). One cannot conclude that Lee's use of an emulsion as an ingredient would result in a mixture that is itself an emulsion, because Lee gives no information

whatsoever about the composition of the emulsion and the resulting polymer-containing mixture might be a solution. There is nothing in Lee to indicate otherwise. Thus, Lee does not clearly teach electrospinning an emulsion. Nor does Lee discuss using both a first component comprising water and a second component comprising a polymer dissolved in a solvent, as claimed, or preparing an emulsion from these components as claimed. Because Lee fails to teach any of these several claim features, Lee could not have led the person of ordinary skill to arrive at the claimed invention, and thus cannot render claim 22 obvious.

The rejection further states that it would have been obvious to use volume percents of first and second components taught by Kozlowski in performing the electrospinning operation of Lee, "in order to manufacture a fiber having superior strength and other properties."

There is no indication on the record that Lee's fibers don't already have superior strength, and there is no teaching in Lee of a need to improve fiber strength beyond what he has disclosed. Nor does the rejection explain why the person of ordinary skill would have had a reason to seek strength improvement. As noted earlier above, however, a finding of obviousness requires the rejection to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This has not been done, and for this additional and separate reason the rejection should be withdrawn.

The amendment to claim 17 is supported in the specification at page 6, lines 3-6. Several other claims are amended for clarity and/or to correct syntactical or typographical errors. No new matter has been added.

Applicants submit that the application is in condition for allowance, and respectfully request reconsideration and notification of same. Applicants invite the Examiner to contact their undersigned representative, Frank Tise, if it appears that this may expedite examination.

Respectfully submitted,



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